

# Content & Critical Thinking

adapted from [www.criticalthinking.org](http://www.criticalthinking.org)

## ***Content as a Mode of Thinking, Teaching, & Learning***

One of the reasons that instructors tend to overemphasize "coverage" over "engaged thinking" is that they assume that answers can be taught separate from questions. Indeed, To understand content as a mode of thinking, we need to recognize that all content has a logic which is defined by the same eight dimensions that define the thinking which produced, and continue to produce it.

- All content/thinking has been **generated by organizing goals** and **purposes** (that enable professionals to share in the pursuit of common ends and projects).
- All content/thinking is defined by the **problems** it defines and solves.
- All content/thinking pre-supposes the **gathering and use of information** in professional performance & problem solving.
- All content/thinking requires the **making of inferences from relevant data** or information **to interpretative conclusions** (rendering thereby the data of use for guiding judgments).
- All content/thinking is **structured by concepts** (theoretical constructs) that organize, shape, and "direct" it.
- All content/ thinking **proceeds from assumptions** or presuppositions from which it logically proceeds (providing "boundaries" for the field).
- All content/thinking **generates implications** and **consequences**, that enable professionals to make predictions and test theories, lines of reasoning, and hypotheses.
- All content/thinking defines a **frame of reference** or point of view (which provide practitioners with a logical map of use in considering the professional "moves" they will make).

Each of the above sentences, as you may have noted, read equally well with either "content" or "thinking" as the subject. This is no accident of language. There is a perfect logical symmetry captured in each case. The symmetry is a reflection of the fact that **all of what we call "content" is nothing more nor less than an organized product of a specific mode of disciplined thinking, developed by a community of thinkers.** When we master the logic of the thinking, we master the logic of the content. When we master the logic of the content, we master the logic of the thinking. For example, when we learn to think like a biologist, we, at one and the same time, master the logic of the discipline called "Biology." When we master the logic of "Biology," we master the logic of biological thought.

Once we begin to grasp **content as a mode of thinking**, we can begin to isolate the connection between what it is that good thinkers must do to think well within that content and what it is that **students must do to perform competently** in the academic field defined by it. For example, it is possible to construct a description of academic goals that can be contextualized for virtually any field of study. Consider the following description of what a biology student should be able to do to be truly educated thinker in the biological sciences.

## **What a Truly Educated Biology Graduate should be Able to Do**

“Students successfully completing a major in Biology will demonstrate a range of biological thinking skills and abilities which they use in the acquisition of biological knowledge. Their work at the end of the program will be clear, precise, and well-reasoned. They will demonstrate in their thinking, command of key biological terms, concepts and distinctions, the ability to identify and solve fundamental biological problems. Their work will demonstrate a mind in charge of its own biological ideas, assumptions, inferences, and intellectual processes. They will demonstrate the ability to analyze biological questions and issues clearly and precisely, formulate biological information accurately, distinguish the relevant from irrelevant, recognize key biological assumptions, use key biological concepts effectively, use biological language in keeping with established professional usage, identify relevant competing biological points of view, and reason carefully from clearly stated biological premises, as well as sensitivity to important biological implications and consequences. They will demonstrate excellent biological reasoning and problem-solving.”

## **Mastery of Content is Necessary to Think Critically**

Some might read the sections above and conclude – **wrongly** – that mastery of content (what some call objective knowledge) is irrelevant or unnecessary. **Nothing is further from the truth.** One cannot even begin to frame even a simple intelligent question without content to direct one’s question at. Most of the eight dimensions of the logic of content/thinking have an implicit, if not explicit expectation of mastery of content as a necessary pre-condition. The descriptions of what a competent biology graduate should be able to do include numerous statements that represent mastery of content, including ... “command of key biological terms, concepts and distinctions”... “ability to analyze... clearly and precisely”... “distinguish the relevant from the irrelevant”, “use key biological concepts effectively”, and ... “use biological language in keeping with established professional usage”. Although traditional textbooks tend to focus on declarative presentations of content, they are still being used because **they are effective in helping students gain mastery of content.** It is the instructor of a course (not the textbook) who serves as “facilitator” of critical thinking in the subject and discipline.